This applies more especially, perhaps, to the sections treating on the examination of chrome-iron, silicon-iron, nickel alloys, &c.

The volume is particularly valuable as embodying the results of an extensive experience in the examination of certain iron alloys which are bound to become of special importance in the near future; most steel works analysts will cordially appreciate this portion.

As the results of my own practice, I can confirm the accuracy and efficiency of most of the selected methods; more especially as applied to the assay of ferro-chrome, ferro-aluminium, silicon, nickel, &c.

In regard to the assay of ferro-chrome or steels, Galbraith s method is to be preferred, if the precautions given are adopted. The original process did not always give concordant results. The gravimetric methods are, however, on the whole most trustworthy. Results are apt to be low unless great care is taken; no doubt for the reasons shown at page 207. The estimation of small quantities of aluminium presents difficulties not easily overcome; indeed, simpler and less complicated methods are required: a remark which applies to most of the methods now practised.

The assay processes for sulphur and phosphorus are clearly set forth, leaving practically nothing to be desired. For the former element, certainly, gravimetric estimations are best; but it is nearly impossible to obtain the necessary acids quite free from sulphur compounds: this constitutes a serious drawback, and entails the necessity of a blank experiment, which should be avoided when possible. The evolution methods give only relative results, agreeing pretty closely amongst themselves, but somewhat under those obtained gravimetrically. The author's colour test is a good one, but somewhat complicated. A more simple modification of the colour test consists in passing the evolved H_2S through 50 c.c. of a very dilute lead acetate solution ($\frac{1}{10}$ grm. in litre H_2O) contained in a long test-tube. This is compared with a standard steel, treated in the same manner, containing a known percentage of sulphur. No precipitate is formed, and a clear brown tint is obtained, which lasts for some time, and is easily compared with the standard.

The processes advocated for phosphorus (pp. 110-115) are complete, but the necessary manipulative skill required to carry them out can only be acquired by constant practice. I find, however, that the addition of a little HCl to the nitric acid solution assists the precipitation of phosphorus when precipitating with ammonium molybdate. Further, I agree with the author that in ordinary steels the presence of silicic acid may be ignored: with regard to time, fifteen or twenty minutes is ample; if longer, molybdic acid is precipitated. In addition, even if this does not occur, the precipitate may redissolve to a notable extent. The dried phospho-molybdate precipitate is distinctly soluble in dilute nitric acid.

The author's method of precipitating arsenic with H_2S is good, but no others are given. The process with modifications gives good results, but the ordinary method is preferable when it is desired to estimate this element. For the mere elimination of arsenic from the phosphoric acid, in order to determine the latter, the boiling or distillation process is useful.

It is to be regretted that no trustworthy process has been given for the determination of oxygen in steel. A thorough examination of the whole work, however, reveals the pains taken by the author, not only as regards the portions mentioned in the foregoing, but also in the somewhat less important sections dealing with fuel and other materials. There can be little question that Prof. Arnold has rendered steel-works analysts a decided service by the publication of his work.

JOHN PARRY.

OUR BOOK SHELF.

Wayside and Woodland Blossoms. A Pocket Guide to British Wild Flowers for the Country Rambler. By Edward Step. With coloured figures of 156 species, black and white plates of 22 species, and clear descriptions of 400 species. (London: Frederick Warne and Co., 1895.)

MANY persons who admire the beautiful flowers that adorn our woods and pastures would fain know their names, with a view to further knowledge of them; but for various reasons they are unable to use the ordinary "Flora," however simply compiled. Here is a little book that will meet the wants of such persons, and do more, we believe, to lay the foundation of a sound knowledge of plants than the form in which "life-histories" are taught in ordinary schools and classes for the purpose of passing an examination. In spite of all that is said to the contrary, to know a large number of plants, animals, or minerals by sight, is of more value, to begin with, than a more detailed knowledge of a single, or few, organisms or objects; especially when this detailed knowledge is gained by rote, and not by observation. We therefore commend this little book to the notice of those interested in, and believing in, small beginnings, though the kind of information it contains is not exactly what the examiner demands. The coloured figures are well drawn, and the colouring, although a little crude, is good enough to enable one to recognise the plants the figures are intended to represent. The majority of the common and prominent plants of our native flora are figured. Many of them are drawn of the natural size, whilst others are reduced and a few enlarged, without indications of the reduction or enlargement. These things should be explained for a beginner. The descriptive and explanatory letterpress is instructive, and free from pedantry, by which we mean the display of technical terms only used by "teachers" of botany; not by botanists. There are some inconsistencies in the choice of subjects for illustration. For example, the exceedingly rare *Holosteum umbellatum* is represented, whereas the allied genus *Cerastium*, found in every county, and perhaps in every parish and field in the kingdom, is left out. There is also an unexplainable absence of characteristic sea-side plants. The black and white figures mentioned in the title represent native trees and some of the commonly-planted exotic species. An omission here is the common yew, which might well have taken the place of the very poor figure of *Ailantus*. In spite of the shortcomings indicated, we strongly recommend this little pocket-book to those in search of some practical knowledge of common wild plants.

W. B. H.

The Lepidoptera of the British Islands; a Descriptive Account of the Families, Genera, and Species indigenous to Great Britain and Ireland, their Preparatory States Habits, and Localities. By Charles G. Barrett, F.E.S. Vol. ii. Heterocera, Sphinges, Bombyces. (London: L. Reeve and Co., 1895.)

MR. BARRETT'S great work on British *Lepidoptera* is making steady progress, and we are glad to find that the second volume which includes the Sphinges and the first

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nine families of Bombyces, ending with the *Psychidæ*, is written in the same careful and painstaking manner as its predecessor. The first volume has been well received abroad, but the foreign critics regret the absence of references, a deficiency more felt by them than by British lepidopterists. The foreign critics speak of the plates as a veritable storehouse of remarkable varieties; but we must again comment very severely on the action of the publishers in issuing two editions of the work, one with, and the other without illustrations, without any reference to the illustrated edition in the letterpress of the other, so far as we have noticed; and in the case of the second volume, without even as much as an advertisement to call attention to its existence.

There are several points of general scientific interest suggested by an examination of Mr. Barrett's book. A great number of species recorded as British by the older entomologists, but rejected by Doubleday and Stainton, have latterly been rediscovered and reinstated. This has happened so often, that it seems likely that when we eliminate accidentally introduced species (chiefly North American), and European species wrongly determined, it will be found that the information given by the older writers was far more accurate than the writers of the middle of the century were at all disposed to admit. Nor did the latter allow for the difficulty of communication with the continent at the beginning of the century, which added much to the improbability of specimens asserted to have been taken in England, having been simply brought over from the continent.

In estimating the probability of a reputed species being truly British, the chief factor to be taken into account is its continental range. It is evident that the British fauna is slowly changing, some specimens becoming rarer or even disappearing, and others becoming commoner, or establishing themselves in England for the first time. There is also some tendency in Mediterranean species to extend their range further north in Western Europe. As the late Mr. Stainton once remarked, the comparison of our present lists with those of the future, will be likely to yield highly unexpected and interesting results.

W. F. K.

Quellenkunde. Lehre von der Bildung und vom Vorkommen der Quellen und des Grundwassers. Von Hyppolyt J. Haas. 8vo. pp. 220. Illustrations in the text. (Leipzig: J. J. Weber, 1895.)

PROF. HAAS, of Kiel, when asked to edit and bring up to date the "Quellenkunde" of Abbé Paramelle, came to the conclusion that in order to state the present position of the science of springs and underground water in a satisfactory form, an entirely new work was necessary. Hence the book under notice. In such small compass, nothing approaching a complete treatise could possibly be attempted. The chief features of springs, their classification and relation to geological conditions, are discussed according to a clearly arranged plan under five principal heads. First comes a discussion of springs in general, including an historical introduction, in illustration of which several of Athanasius Kircher's quaint pictures are reproduced. The following sections deal with thermal and mineral springs, underground water, and the art of finding springs. In the last division we find some remarks on the divining-rod. The book should prove useful to students of physical geography and to those concerned with the practical utilisation of a water-supply derived from wells.

A number of diagrams are reproduced from the works of Daubrée and other authorities. Although several English authors are cited, we fear that Prof. Haas has not made himself familiar at first hand with the literature of the subject in English, which is by no means meagre in records of original observations on the movements of underground water, and deserves more recognition than it receives.

LETTERS TO THE EDITOR.

[*The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts intended for this or any other part of* NATURE. *No notice is taken of anonymous communications.*]

Uniformitarianism in Geology.

DR. ALFRED WALLACE, in his letter to NATURE of May 2, calls attention to the significant fact that catastrophes caused by volcanoes "may be of greater magnitude now than in geologic times," owing to the crust of the earth being thicker now than it was then. He, however, is mistaken in supposing that this consideration has been overlooked by geologists. If he will kindly refer to "Geology," vol. i. p. 449, he will find it there stated, speaking of the older fissure and explosive eruptions, that "there is nothing to show that this [the explosive] action was on the same scale of magnitude and permanence as those of late Tertiary and recent date. With the greater thickness of the earth's crust and the greater resistance presented by its rigidity, volcanic eruptions must with time, as suggested long ago by Elie de Beaumont, have altered with the alterations of those conditions, and may now be exhibited under a phase very different from those of the earlier periods."

Or again, he will find in "The Position of Geology" ("Collected Papers," p. i.) it stated that, though one form of volcanic action (the fissure) was more active in the past than at present, that "explosive eruptions are more violent now than in former times." And again, at p. 145 of the same work, I remark that "while with the thinner crust of former times, there would be a more frequent extrusion of the molten rock, there are probably with the thicker crust now formed and consequently its greater resistance, greater forces stored in the explosive eruptions of the present day."

The instance relied upon by Dr. Wallace is, however, another striking example, if others were needed—though in this case it is on the inverse side as against meteorological agencies—of the non-uniformity *in degree* between the action of the forces of past and present times. The increased thickness of the crust is not, however, the sole cause of the violence of recent eruptions, nor are they, I imagine, due to the presence of occluded water in the volcanic foci. The terrific eruptions of Krakatão and other volcanoes are, I conceive, due simply to the access of vast volumes of surface waters and their sudden flashing into steam.

Volcanic action, therefore, does not seem to me to be in any way in contradiction to the conception of uniformity of *kind* or law, and to non-uniformity on the question of *degree*.

Sevenoaks, May 4. JOSEPH PRESTWICH.

Green Oysters.

I HAVE just received a "Note," extracted from the *Monitore Zoologico Italiano*, of Florence, by Dr. Carazzi, in which a number of unsupported statements are made as to "phagocytosis in Mollusca."

Amongst other statements, I find "Non solo sono osservazioni erronee quelle del Lankester, malamente ripetute dello Chatin, ma lo sono egualmente quelle del Pelseneer e del Bruyne." I am surprised that my zoological friends in Florence should publish a bare statement of this nature without a shred of evidence to support it. I desire to draw attention to the simple assertion made by Dr. Carazzi, and to let those who are responsible know that I and others expect him to show in detail what is the error in the observations published by me on the green oysters of Marennes.

It is certainly not a usual thing for a Society to allow an author to print vague accusations of inaccuracy in reference to other writers, without the smallest attempt to justify such accusations.

Dr. Carazzi's assertion is all the more remarkable, since it appears that he has not examined the true *huitres de Marennes* at all, and is singularly ill-informed as to the histology and physiology of Mollusca.

I shall be very much surprised if Dr. Carazzi can show that the observations published by me on green oysters in 1886 (*Quart. Journ. Micr. Sci.* vol. xxvi.) are erroneous, and shall at once re-examine the matter if he succeeds in throwing doubt on the facts as stated by me.

Inferences from observed facts stand in a different position from the observations themselves.

I was the first to describe the cells laden with green granules

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